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Redesigning Public Sector Pensions in Developing Countries

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Abstract

Pensions in the public sector cover state, municipal, and federal government employees in addition to workers in publicly-managed enterprises. Until recently, the most prominent model for public employee pension plans in both developed and developing economies was the defined benefit (DB) plan. Nevertheless, the status quo is now changing as public plans are being asked to catch up with global changes in labor and capital markets. As a consequence, defined contribution (DC) pensions are now making headway in many cases as an alternative or sometimes an additional pillar of public employees' retirement systems. This paper examines public pension plan design and management decisions in developing countries, beginning by identifying the key functions of a pension plan and the range of structures implemented as well as their economic effects. We then discuss the rationales for and means of moving to a funded public pension system, including the problems associated with underfunding and the ways in which accrued rights can be financed and managed, with attention to the range of stakeholders in a public pension system. Finally we explore governance and investment issues in the context of public pension plans. A number of public pension changes exist that could contribute materially to the strengthening of the pension promise in developing nations, while making the plans more equitable, more economically efficient, and more financially solvent. These reforms could benefit not only the employer and employee groups most directly associated with public pension systems, but they can also enhance the wellbeing of broader groups including taxpayers and consumers on whom the burden of high taxes and reduced public services ultimately fall.

Disciplines

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Abstract

Pensions in the public sector cover state, municipal, and federal government employees in addition to workers in publicly-managed enterprises. Until recently, the most prominent model for public employee pension plans in both developed and developing economies was the defined benefit (DB) plan. Nevertheless, the *status quo* is now changing as public plans are being asked to catch up with global changes in labor and capital markets. As a consequence, defined contribution (DC) pensions are now making headway in many cases as an alternative or sometimes an additional pillar of public employees' retirement systems. This paper examines public pension plan design and management decisions in developing countries, beginning by identifying the key functions of a pension plan and the range of structures implemented as well as their economic effects. We then discuss the rationales for and means of moving to a funded public pension system, including the problems associated with underfunding and the ways in which accrued rights can be financed and managed, with attention to the range of stakeholders in a public pension system. Finally we explore governance and investment issues in the context of public pension plans. A number of public pension changes exist that could contribute materially to the strengthening of the pension promise in developing nations, while making the plans more equitable, more economically efficient, and more financially solvent. These reforms could benefit not only the employer and employee groups most directly associated with public pension systems, but they can also enhance the wellbeing of broader groups including taxpayers and consumers on whom the burden of high taxes and reduced public services ultimately fall.

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Redesigning Public Sector Pensions In Developing Countries

A recent review of civil service pension programs in 53 different countries found that many public employee retirement systems are headed toward, or are already in, a state of financial collapse (World Bank, 2000). The purpose of this study is to identify steps in the design and management arena that might help make such public sector pension systems more viable in developing countries. We also outline potential lessons for countries seeking to reform financially insolvent and economically inefficient pensions covering public sector workers.

The discussion is divided into several sections. In the first and second sections, we describe the most important rationales for pensions and the main objectives of public sector pension systems. Next, we explore public pension design and structure, focusing on the types of plans and their diverse objectives and impacts. Then we turn to a discussion of organizational and intergovernmental considerations in public pension plan management, examining the stakeholders and implications for political economy. This leads naturally to the topic of public plan governance where we evaluate the role of pension trustees and pension fiduciary standards. From this subject, we move to an assessment of investment objectives and behavior in public pension plans. In the final sections, we offer an evaluation of challenges specific to the public pension sector and link this discussion with implications for the public pension environment in developing countries.

I. The Rationale for Pension Plans

Before proceeding to explore public sector pensions in detail, it is important to clarify what a pension plan is, how it works, and whom it benefits.

A. What is a pension plan?

At its core, a **pension plan** is a *long-term financial contract* that promises to pay a retiring worker a sum of money intended to support old-age consumption.¹ It is conventional to distinguish between **defined contribution** (DC) and **defined benefit** (DB) plans when discussing such plans, since they take different forms and imply different costs and risk-sharing. In the DC case, the sponsor promises to deposit a *specified contribution* into the plan periodically (e.g. per pay period), and the plan participant (the employee) bears capital market risk associated with the investment returns on that deposit. By contrast, in the DB case, the sponsor promises to pay the retiree a *specified benefit* (often as a function of pay and years of service; see McGill et al., 1996), and in this case the sponsor bears the risk of setting aside funds adequate to pay the promise.

¹ This section draws on Mitchell (2000a).

Contribution formulas in DC plans vary widely. Private employer plans in the US have combined employer and employee contribution rates of 6-8% of employee pay while teacher pensions often have joint contribution rates of 12-14%. In other countries, DC rates also span the range, at around 10% of pay in Chile and Australia for mandatory contributions and higher in Singapore, where the mandatory contribution has been as high as 40% of pay. In a funded DC plan, usually the monies are invested in stocks, bonds, or other financial instruments at the participant's direction (though in Singapore and other provident funds the federal government generally invests the funds as a block without participant discretion). On retirement, the DC participant will typically be permitted to convert his accumulation into an annuity payable from retirement until death (or the death of the spouse, if a joint and survivor benefit is selected). It is also common to allow DC participants to take some or all of the pension accrual in the form of a lump sum. This sum may then be spent immediately, or invested individually and then drawn down based on anticipated life expectancy (this is the "programmed withdrawal" or "minimum distribution" notion seen, for instance, in the Chilean and Mexican pension systems).

By contrast, the DB plan sponsor typically specifies the pension promise by defining a benefit formula that determines a participant's eventual retirement payments. For instance, a formula for a retirement benefit amount (B) payable in year t , to a retiree age A who retired at age R could be formulated as follows:

$$\text{Benefit} = B_t|A,R = b(\text{YRS}, \text{FAP}, A) * \text{YRS} * \text{FAP},$$

where the benefit B depends on the worker's retirement age, his years of service at that point (YRS), and his final average pay (FAP). Here the term $b(\bullet)$ is a function transforming the worker's age at retirement, service, and pay into a benefit amount. This function might be a smooth one (e.g. 1% of pay per year of service) but more commonly it provides for higher benefits at longer years of service or for pay earned above some threshold (Fields and Mitchell, 1984). In the case of a funded DB plan, the plan sponsor is expected to contribute to the plan in an orderly fashion according to actuarial standards, so the needed funds are available when the worker retires. Generally a defined benefit pension is payable in the form of an annuity, though sometimes an employer will permit a lump sum cash-out equal to the discounted present value of the future benefit.

In well-run pension systems, contributions flowing into both DB and DC pension accounts tend to be sheltered from income tax at the time the contributions are made, and frequently, investment earnings building up inside the pension fund can also accumulate on a pre-tax basis. When this is so, the pension plan is said to be "tax qualified" – where contributions and within-plan build-ups are not subject to tax until retirement.² Having a tax-deferral aspect of pensions is clearly valuable to employees in a

² For a comparative discussion of pension tax treatment see Dilnot (1996).

high marginal tax bracket and whenever the plan is funded (i.e., when it has substantial assets to back pension liabilities).

In many cases, a pension plan's assets must be segregated from the sponsoring employer's own assets, held in trust on the participants' behalf.³ If so, the DC plan's assets are by definition equal to plan liabilities, since participants have full claim on what is deposited in the plan via contributions, and also on investment earnings. By contrast in the DB case, in many countries plan participants are considered to "own" the promised benefit, but the plan might not be fully backed by sufficient assets to pay future benefits. When this occurs, current contributions may be used to support current retirees, at least in part. This type of DB plan is characterized as *underfunded*; in the extreme case where no assets at all are set aside, the plan is known as a "pay-as-you-go" (PAYGO) pension.⁴

B. Who benefits from having a pension plan?

Workers and their employers both reap economic rewards from having a pension plan. Being covered by a pension has been demonstrated to help during both the accumulation and the decumulation phases of retirement saving. Employees like pensions because they serve as a "self-control" device, representing a pre-commitment method of saving for retirement on an automatic basis. Cost-savings associated with group pensions are also substantial (Mitchell, 1998), meaning that scale economies can make it more cost-effective to save in a large pooled fund than on one's own. Additionally, many countries offer a degree of tax protection to pension contributions, pension plan investment earnings, and even pension payouts. These can be very important in reducing savers' lifetime tax burdens and providing an additional incentive to accumulate assets in a retirement vehicle. In developed countries, pension saving has been shown to be fairly sensitive to tax deferral practices, with estimated tax elasticities ranging from -0.3 to -0.8 (Gustman et al. 1994), meaning that a 10% reduction in taxes levied on pensions could boost pension saving by around 3-8%. While no empirical elasticities have been estimated of this type for developing countries, they may well be even larger, in view of the additional opportunities for system participants to evade taxes in a country with a large informal labor market.

Finally, having a pension plan that pays out benefits in the form of a life annuity affords workers with protection against longevity risk, by pooling mortality risk across others. People lacking access to pensions paid out in the form of an annuity run the risk of either spending too little so as not to outlive their assets, or overconsuming and ending up in poverty in old age. Participating in a pension that pays

³ This is codified in the US law governing private pensions, the Employee Retirement Income Security Act (ERISA) of 1974; see McGill et al. (1996). In the US, ERISA only applies to private-sector firms, though many public pension plans have adopted many of the law's key elements (e.g. the prudent person rule).

⁴ Most DC pension plans are funded, though some countries – Latvia and Sweden, recently – have adopted so-called "notional" accounts (see Disney 1999) where the government promises some fixed return on worker contributions, yet no individual account is actually invested on workers' sole behalf.

lifetime benefits can be quite valuable, in this event, particularly when adverse selection makes individual annuity purchases more expensive than group purchases (Brown et al., 1999).

Employers also have several reasons to consider pensions a valuable element of the compensation package. Clearly any element of compensation – including pension contributions – cannot be seen as a “free” good from the employer perspective. That is, a larger pension promise offered for the future must be traded off for lower wages or some other type of compensation. Tempering this tradeoff is the fact that some employers consider pensions as being more valuable than wages, particularly when deferred compensation alters worker behavior in a *productivity-enhancing* way. This has been demonstrated for DB pensions, where pension accruals are deferred until late in a worker’s career. Such deferral has the effect of inducing the employee to remain employed until the company’s desired retirement age, and then to retire after that (Lumsdaine and Mitchell, 2000). But as globalization induces workforce mobility and puts pressure on plan costs over time, fewer employees will be able to plan on remaining with any one employer for an entire worklife. As a result, the traditional appeal of the DB promise is fading. Indeed, recent policy discussions in the European Community have indicated that an international defined contribution pension system for the EU may be a cost-effective model for the integrated economic system of the future. Others have suggested that a regional pension model for Central and perhaps South America could be devised in the decade to come.

A different way in which a pension plan can be used as a personnel tool occurs when the employer offers a deferred match in the firm’s DC program, where the employee is “vested” or legally entitled to the match only after some specified number of years with the company. In the US case, for instance, a 401(k) plan can provide a pension match that may take several years to be *vested*. In this way, the employer will structure the pension to attract, retain, and pay more to those who subsequently reveal themselves to be low-turnover, and hence more highly productive, employees.⁵

In summary, in this section we have shown that pensions are highly complex and long-term financial promises that are appreciated by employees for their risk-pooling, scale economics, tax-deferral and self-control attributes. Employers too value them as important personnel tools, to attract, motivate, and retain workers in accordance with desired employment patterns.

II. Pensions in the Public Sector

In this section we turn to an examination of pensions in the public sector in greater detail. First we ask which types of employees are covered by public sector pensions and what types of benefits they are likely to receive. Next we ask why public sector employers offer pensions instead of paying more in

⁵ A discussion of how pensions are used to attract, retain, and then retire workers is provided in Mitchell (2000b).

cash. The section concludes with an evaluation of why public pensions are the subject of such intensive interest and attention of late.

A. Who is a public sector employee?

In theory, the beneficiaries of public sector pension plans should be easy to identify and distinguish from those covered by private sector retirement schemes: the former includes employees of public sector firms, while the latter cover employees in the for-profit and not-for-profit private sectors. In practice, however, the distinction between these employee types and the pensions covering them may become blurred. For example, it is logical to include in an accounting of public sector employees all federal, state, and provincial workers as well as municipal and local employees. It also should include uniformed government employees (e.g. police, firefighters), those with special skills or employed in public sector jobs (e.g. judges, teachers, medical doctors, miners).⁶

Where the issue becomes more clouded is in the inclusion (or exclusion) of people working for employers having a mixed status such as state-owned businesses and/or joint-ventures between a private firm and a government agency. This definitional problem is particularly complex in developing countries where large government-run firms command vast human and physical resources via parastatal organizations. In some countries, such as in the Caribbean, many important national industries are managed by Statutory Boards, government-run but quasi-independent organizations that are neither completely private nor completely controlled by one government agency. Further, as globalization proceeds, the traditional boundaries between areas once deemed perfectly under the purview of either the public or the private sectors are being eroded. Thus some government activities have been “outsourced” to private sector firms, where tasks that were once deemed solely governmental responsibilities (such as prison management, utilities, refuse collection, and even education) are increasingly being carried out by private sector firms under government contracts.

Such structural changes may make it difficult for governments to differentiate clearly between employees of the public and private sector. The further implication in the present context is that it is becoming increasingly difficult to determine exactly who participates in a public pension system (and indeed, what a public sector job is, in some cases!). As a result, many government organizations are recognizing that a key step in undertaking public sector pension reform is to *evaluate the numbers and types of people covered* by a public sector pension plan and then to *determine their potential benefit liability*. This process becomes quite difficult when payroll and personnel records have not been well maintained and are not computerized. In addition, when pension promises differ by type, location, and

⁶ In theory this should also include members of a country’s armed forces; in practice it is rare to see members of the military included in a public employee plan, since most armed service employees have their own, separate plans. See Clark et al (2000) and Asher (2000).

level of worker, as well as over time, it becomes complicated to sort out what the systematic pension liability actually is across a range of public employees. As a case in point, recent research on four state pension plans in Brazil showed that promised public pension liabilities cannot currently be computed in some cases because records and data are too limited to permit a detailed actuarial assessment of all the different governmental groups covered by the pension system (e.g. Rio de Janeiro; cf Rabelo 2000).

A related problem only recently recognized in the public sector pension context is that in many countries, pension plans have promised to provide much more than just a retirement benefit (e.g. in Brazil, see Pimentel Asociados ND). In addition to retirement benefits, some plans provide survivors' insurance, disability benefit coverage, and even health insurance. In other cases, the pension system may be required to offer participant loans, a practice that generates substantial additional plan costs in both the US and India. While there may be some economies of scope, this has yet to be demonstrated convincingly. More often, asking a pension plan to do too many things can sow confusion regarding the multiple nature of the risks insured, the risk financing problems that are consequently generated, and substantial administrative costs. In addition, this lack of transparency muddies the waters for accounting purposes and it makes it extremely difficult to do clean forecasting of the pension plan's future obligations to retiring workers.

B. Are public pensions different from those in the private sector?

Public employers offer pension plans to their employees for many of the same reasons discussed above – namely because the employees appreciate them, and the sponsors can reap productivity rewards from doing so. But the story is often also rather more complex in the public sector, since public sector employees are sometimes paid on scales that differ markedly from those of private sector workers.

Differential treatment can occur for a range of reasons, some of which are related to market factors and others of which are not (Ehrenberg and Schwarz, 1986). For example, public sector employees may be better educated than average, and hence they tend to command a wage higher than lesser-educated private sector workers. Another is that some public sector jobs may be more risky (e.g. police, military), more physically demanding (e.g. firefighters), or require special attributes (e.g. top level security), making it necessary for public sector to offer these employees additional pay as a compensating premium to get people to take these jobs. Non-market factors also play a role in explaining public-private pay differences. A prominent consideration here is that public sector workers in many countries tend to be highly unionized, and hence they are able to extract “rent” in the form of higher pay, by having government employers pass on higher labor costs to taxpayers (Ehrenberg and Smith, 1994).

As a result of both market and nonmarket factors, public sector workers tend to earn at least as much as their private sector equivalents and frequently more. At the top of the skill ladder, however, there are sometimes politically-imposed pay caps restricting government workers from earning salaries

equivalent to what they could command in the private-sector (Ippolito, 1997). This lack of alignment between public and private pay levels therefore can generate queues for entry-level government jobs, and workers show low turnover after that; by contrast, people in higher-level jobs sometimes find they must leave government service in order to have their pay restored to their market value (Smith, 1977). Alternatively, the pension benefit is sometimes set above that which would be earned in the private sector, to “compensate” the more skilled public sector employee for his lower cash salary.

When there are important differences across several aspects of public and private compensation, this makes the task of evaluating public pensions somewhat complex. Specifically the general question to be kept in mind is whether public sector workers are compensated equitably and efficiently, taking into account all aspects of pay and working conditions (including job security), rather than only how cash salaries or pensions alone compare. And specific aspects of the pensions can work in opposite directions.

To illustrate this last point we note that state and local employees in the US are required to work longer before they gain a legal (vested) right to a pension benefit, with 43% having to work at least 10 years before becoming vested, whereas in the private sector 85% vest after only 5 years (Mitchell et al. 2000). Offsetting this policy is the fact that many public sector plans are permitted “purchase of service” credits, where a public employee who moves from one job to another within a state can purchase credit for past service under the plan on the new job. This is a form of benefit flexibility virtually unknown in private sector DB plans. Other aspects also differentiate public from private pensions, including the definition of earnings used in the benefit formula. Some 61% of US public-sector pensions use the last *three* years of an employee’s earnings career to determine his benefit amount, while private plans tend to use *five* years to determine the fraction of pay used in the benefit formula (78%). State and local pension formulas also adopt a higher benefit multiplier per year of service worked, with 43% providing a benefit accumulation of 2+ percent of pay per year of service, while only 7% of private plans were this generous.

What all this means, of course, is that it is essential to translate the various different benefit features into a common metric that measures the **full economic cost** of the offered benefit. A periodic public-private pay comparison study of the sort undertaken by the US Bureau of Labor Statistics is likely to be worthwhile to this end.⁷ Only with such a systematic, periodic survey would it be possible to

⁷ The Employer Costs for Employee Compensation (ECEC) study developed and undertaken by the US Bureau of Labor Statistics (USBLS) is a periodic effort to measure wage and salary costs per employee hour worked plus the value of employee benefits in the public and private sector. It is frequently used in public/private pay comparability studies. The government collects data from private sector firms as well as state and local government employers. Approximately 26,000 occupations are surveyed and about 6,200 establishments in private industry, with about 4,000 occupations covering approximately 800 establishments in State and local government. As described by the US BLS the coverage of the survey is broad: “Wages and salaries are defined as the hourly straight-time wage rate. For workers not paid on an hourly basis, straight-time earnings are divided by the hours worked. Straight-time wage and salary rates are total earnings before payroll deductions and include production bonuses, incentive pay, commissions, and cost-of-living allowances. Not included in straight-time earnings are nonproduction bonuses,

compare compensation packages and pension plans with different features across private and public sectors. In turn this is needed to determine how benefits with different features can be compared to cash compensation. Otherwise it may be difficult to judge whether, on the surface, one or another provision is substantially costly or different across sectors to the employer providing the benefit.⁸

Another reason it may be difficult to compare public with private pension plans directly is that the two types of plans could have dramatically different funding positions, with private plans often better backed but public plans undersupported by earmarked assets. To the extent that a pension is underfunded, this makes it uncertain as to whether the participant will actually receive his promised full benefit, whether it will be paid out on time, whether it will be protected from inflation, and whether it will continue until death. Such extensive uncertainty undermines credibility regarding the entire compensation structure for public employees, in some cases leading workers to demand a risk premium for their underfunded pensions (Smith, 1981). Some argue this difference in funding can arise because politicians make benefit promises without pre-financing them, and taxpayers seem unaware of the likely later tax consequences of such open-ended promises (Mitchell and Smith, 1994; Inman, 1982, 1986, 1990).

In any event, public sector pension promises in almost every country are less well supported by segregated assets than private plans, and in some cases they have been drained of all assets, subsisting instead on whatever revenues can be found to keep them going on a PAYGO basis. Of course underfunded promises can have a long-term deleterious effect on municipal, state, and even national credibility, undermining bond ratings and bringing down local property values (Eppel and Shipper, 1981). Evidently, when politicians offer pension promises that they cannot back with assets, this can have quite a negative effect on not only public sector employees, but potentially on broader groups of stakeholders as well.

C. Why reform public sector pensions?

Several rationales motivate public pension reform around the world. As noted at the outset, one is practical: the fact is that many of these systems face insolvency currently or in the not-too-distant

such as lump-sum payments provided in place of wage increases, shift differentials, and premium pay for overtime and weekend work; these payments are included in the benefits component. Benefits include: paid leave--vacations, holidays, sick leave, and other leave; supplemental pay--premium pay for work in addition to the regular work schedule (such as overtime, weekends, and holidays), shift differentials, nonproduction bonuses, and lump sum payments provided in place of wage increases; insurance--life, health, short-term disability, and long-term disability; retirement and savings--defined benefit and defined contribution plans; legally required benefits--Social Security, Federal and State unemployment insurance, and Workers' Compensation; and other benefits--severance pay and supplemental unemployment benefits." Further information on the survey is available at <http://stats.bls.gov/ecthome.htm>.

⁸ Another issue is that similarity of employer cost might not generate equivalence in employee value. This could arise, for instance, if two employees receiving the same benefit were taxed at different marginal tax rates, making a tax-qualified employer contribution "worth" different amounts to each on a net basis. For an elaboration see Abowd and Kaplan (1999).

future, and if benefits are to be paid, something will have to be done to render their financing viable. A related rationale for reform is macroeconomic: moving to a funded system could boost household and national saving. Feldstein's theoretical research on social security and saving (1974) illustrated that unfunded old-age benefit promises depress saving when workers consume more believing that future cohorts of workers will support their old-age benefits. By contrast, a funded system could produce increased saving, and with it additional growth.

Many researchers have sought to measure the practical importance of macroeconomic benefits of pension reform, though the empirical evidence is far from conclusive. In the developed economy context, analysts believe that the effect of funded pensions on aggregate savings is positive, but the positive effect has proved to be relatively small (c.f. Engen and Gale, 2000). In the developing country context, only a handful of empirical studies have been undertaken, largely due to data limitations. An aggregate panel study by Reisen (2000) comparing developed and developing countries finds no positive effect of pensions on aggregate saving among the OECD nations which contrasts with a strong and statistically significant positive effect for the non-OECD countries he examines. Nevertheless the dataset used for that analysis was restricted to 6 developed and 6 non-OECD nations, the latter including only Chile, Korea, Malaysia, Singapore. Whether his findings would generalize to the larger set of funded pension in developing nations is unknown. Holzmann (1997) argues on theoretical grounds that the macroeconomic effect of funding a developing country public pension plan could be quite positive for two reasons. One is that moving from an unfunded to a funded system can generate positive economic externalities, including the promotion of deeper, more complete, and more liquid financial markets (Holzmann 1998). Another reason is that unfunded schemes often embody only a weak link (if any) between taxes paid by workers and benefits received, meaning that the pension system may impart important labor market distortions reducing efficiency and productivity. To the extent these distortions are large and the negative externalities can be reduced with pension reform, this too justifies moving to a pension scheme where there are tighter links between the benefits and contributions – as in a DC rather than a DB pension plan.

Another rationale for public pension reform is that some countries may require realignment in public versus private sector workers' pay and benefit levels, as part of a wider move to "reinvent government". The latter term generally involves implementing modern human resources and incentive-based performance-motivated pay techniques that have become the norm in private sector workplaces (Reid, 1992).

Related to this point are the underlying changes sweeping both domestic and global labor markets. As the workplace continues to become more dynamic, employees more mobile, and jobs more flexible, pensions may need to be reformed to "keep up". In the past, however, public sector employment was always depicted as the antithesis of the "new workplace", rewarding long-term permanent workers

who rarely had their performance evaluated or their pay linked to performance, who rarely undertook additional training after hire, and who never left their jobs prior to retirement. In the future, by contrast, the nature of public employment in every country is likely to be revamped, with regard to both skill and technological requirements. More public sector workers will likely find that they might not wish to remain with a single public employer for life, preferring instead to obtain a range of skills and exposures to alternative work environments to increase job opportunities and build training expertise. Finding ways to permit and even enhance opportunities for labor mobility is compatible with public pension reform, in the eyes of those who would like to make public sector employment more responsive to customer as well as employee desires and needs.

Another labor market factor driving public pension reform in some countries has been workers' growing interest in investing their retirement funds on their own. The growth of 401(k) pensions permitted millions of US private sector employees to diversify their retirement portfolios, to the point where about half the population now owns some equities in their portfolios. Public sector workers too have begun to push for similar investment access for their retirement funds; US federal employees are now permitted to invest their saving plan assets in a range of capital market funds, and additional ones are being introduced on a periodic basis. Most recently in Japan, the government has announced that a 401(k)-type pension model will be rolled out in 2001 (Mitchell, 1999).

Of course, there are many additional motivations for public pension reform, and one prominent one is taxpayer desire to redirect the way governments spend taxpayer funds. Throughout the Americas, it has been recognized that public pension plans are increasingly imposing ever-higher burdens on government budgets already facing a cash-flow crisis. In Brazil, for instance, paying pension benefits commands such a large fraction of some states' revenue that very little financing remains to cover education, roadwork, public health, and other demands on the fiscal budget (World Bank, 2000).

A related motive for pension reform flows from a worldwide movement to privatize enterprises previously held under government control. When state or local governments sell stakes in telecommunications, banks, mines, electrical utilities, and similar other large enterprises, it is not surprising that prospective owners would seek clarification over who is liable for retiree and worker pension benefits when these formerly-public firms are privatized. These unfunded liabilities can be "deal-breakers", emphasizing the importance of accounting fully and correctly for the pension assets and liabilities, and moving quickly to reform the plans to make their sponsors viable enterprises going forward. This is far from a simple process, as witness the efforts of the Chinese to value pension liabilities associated with state-owned enterprises in the last few years. The international effort to properly account for pensions is supported by the International Accounting Standards Board (IASB), as it seeks to implement an international set of common accounting and reporting standards regarding

company assets and liabilities, including pensions, for the purposes of enhancing pension transparency from a financial viewpoint, and corporate governance norms as well.

As governments are being asked to do more with less, and streamline other activities, this too has led to a push to control costs associated with administering and investing in public pension plans. For example, in some countries, public pensions have actually accumulated assets, prompting fiduciaries to think of better ways to manage these funds (Palacios and Iglesias, 2000). In particular pension managers are increasingly seeking ways to cut administrative costs and increase pension investment efficiency. A comparison of various public defined contribution benefit system charges in the Latin American region is provided by Whitehouse (2000) who expresses these both as the impact of higher expenses in terms of lower yields on participants' saving, or the charge treated as a one-time front-loaded fraction of the first-year contribution:

	# of Funds	Reduction in Yields	Charge/ Contribution
Colombia	8	0.65	13.5
Uruguay	6	0.72	14.7
El Salvador	5	0.85	17.1
Chile	8	0.88	17.7
Peru	5	0.96	19.1
Argentina	13	1.20	23.1
Mexico	13	1.39	26.0

Source: Whitehouse (2000).

Global benchmarks are now available indicating that pension investment management can be handled for 10-20 basis points per year (or 0.1-0.2% of plan assets; c.f. Mitchell, 1999) with charges being even lower for larger plans. This sort of information is prompting money managers to offer lower-cost benefits, in regards to public plan asset management and service delivery.

In summary, in this section we have shown that defined benefit and defined contribution pensions differ in the nature of their promise and the nature of the risks borne by employers and employees. Though DB plans were more traditional in the public sector in past decades, defined contribution pensions are now spreading rapidly. Evidently, in the process of public pension reform, a high priority must be accorded to (a) determining how many and which types of employees and retirees are covered by each plan; (b) assessing the sponsor's liability for the entire range of benefits provided under the plan; (c)

estimating the pension fund's revenue flows and stock of assets; and (d) conducting a series of simulation exercises to forecast how sensitive the survival of the pension plan is to changes in future assumptions. In many cases, such an assessment produces unexpected or at times unpleasant results since they may indicate that pension costs will increasingly exceed sources of financing. Yet only with a full assessment of the public plans' assets and the present value of pension liabilities will the full extent of the problem become known. A valid and complete pension projection exercise is therefore essential to serve as the impetus for reform and to assess the costs and benefits of any particular pension changes.

III. Public Pension Design and Structure

In this section we discuss the key functions of a public pension plan, what types of pension plans exist in the public sector, what determines whether public plans are funded, and how the transition from underfunding to funding should be handled in the public plan context.

A. What are the key functions of a public pension plan?

All pension funds, irrespective of what kinds of employees they cover or which type of structure they provide, have four crucial functions (see Table 1):

- Collecting contributions/taxes,
- Managing investments,
- Providing recordkeeping and reporting,
- Paying benefits to plan beneficiaries.

By *collecting contributions or taxes*, we refer to the plan's responsibility to see that required pension financing is, in fact, delivered to the pension managers. Unfortunately this is sometimes more easily said than done in the public sector, inasmuch as pension agencies can have difficulty requiring the sponsoring government entities to actually deposit the owed monies into the pension accounts. For instance, state-owned enterprises in Asia have found this to be a substantial problem, leaving the pension plan with little recourse to challenge the nonpayment (Asher, 2000). When employees are required to contribute out of payroll, extraction of the contributions may be somewhat easier to monitor and enforce, though here too, employers do not always deposit the monies into the appropriate accounts with alacrity. Mexico has sought to expedite the entire pension contribution process by having the regulatory authority require that each step take no more than a certain number of days, and it insists, for instance, that no more than 7 business days elapse between the time the sponsor receives the contributions and the funds are invested (Cerdeña and Grandolini, 1998).

The second function of a public pension is to *manage investments*, by which we mean the process by which the plan assets are transferred to the capital market. This is key, of course, where there assets

backing the promised pensions, in which case the pension system must determine the plan's investment policy, select its investment managers, pay the plan's investment fees, and obtain performance reporting as needed. Some public pension plans are required to work with stringent "legal lists" of pre-approved investments, while others have freer rein to seek a diversified investment portfolio. In general the goal would be to grow the fund by earning strong returns without taking unnecessarily high risk.⁹ Pension system objectives and tools available to meet these objectives may be summarized as follows:

Pension System Investment Objectives:

The goal of pension system investment is to manage the assets in the pension portfolio so as to meet three objectives:

- Rate of Return Target: Maximize return consistent with preservation of capital and liquidity.
- Risk Objective: Ensure that portfolio variability patterns is consistent with pension stakeholders' risk tolerance.
- Liquidity Requirements: Meet cashflow needs associated with pension benefit payments.

Elements of Pension Investment Strategy:

A pension manager has several techniques and tools to achieve the plan's investment goals, taking into account several strategies:

- Diversification: Plans tend to hold a range of assets to meet risk/return/liquidity needs.
- Active vs Passive Management: Active management involves frequent trading to meet return objectives "higher than those of a market portfolio" for higher fees; passive management tracks the market with infrequent trading and incurs lower fees (e.g. index funds).
- In-house vs Outsourced Investment: A plan sponsor can devote own staff to managing the assets or instead allocate to outside money managers part (or all) of the task.
- Asset Allocation: Plan assets must be divided across cash (or equivalents), fixed-income instruments, and equities, and sometimes decisions are more finely-detailed by asset class.
- Choice of Sector, Quality and Duration: A pension investment expert must be aware of and manage how assets are allocated across industrial sector, split international vs domestic, defined by the terms on which the assets are traded, and respond to interest rates and other factors (e.g. inflation).
- Selection and Trading of Securities: The timing of asset purchases and sales as well as investment expenses influences net pension returns and risk.

⁹ Global standards for investment performance have been devised and posted on the internet by the Global Investment Performance Standards office (www.aimr.org/standards/pps/gips_standards.html#preamble).

Source: Derived from McGill et al. (1996: 658-667).

A third responsibility of a public pension plan is to undertake *recordkeeping and reporting* tasks. The recordkeeping is essential in tracking employees who have contributed (or who have had funds contributed on their behalf), for how long, and at what rates. These tallies are frequently essential in establishing benefit eligibility and determining benefit levels. Supervisory or monitoring entities are also likely to demand periodic data on the plan's assets and liabilities, both current and projected, and these must rely on accurately kept and personnel records kept in computer-readable formats. The reporting tasks also include quality assessment covering services provided, grievances and resolutions, and so forth.

Last but not least is the ultimately most important task of a pension plan -- *paying benefits to plan beneficiaries*. Pension systems are increasingly criticized for taking months or sometimes years to determine retiree eligibility for benefits, to award applicants with benefits, or to determine who is eligible for what kinds of benefit amounts. Similarly there are increasing complaints about benefits being contested or cut, or payments delayed for long periods of time. Conversely, pension systems are sometimes charged with fraud and abuse, as when poor governmental recordkeeping permits ineligible persons to receive benefits.

In general then, all pension systems must undertake similar functions, and ideally discharge them efficiently and effectively, irrespective of the specific type of public pension plan in question.

B. What do public sector pension plans look like?

Various alternative institutional designs have been devised for public pension plans, given the need to discharge the four tasks outlined in the previous section. Across the Americas and Europe, the historical norm has been the **defined benefit** (DB) format for the most part, though with varying levels of complexity.¹⁰ For example in the US, a state and local DB plan might define the benefit formula in terms of a fixed multiplier, say 2% of earnings per year of service, with the base defined as three-year average pay for the calculation (Mitchell et al 2000). These figures would generate a public pension benefit that is higher than the typical private pension payout, where the multiplier would generally be lower (e.g. 1.75% of last 5 to 10 years of average pay). One reason the public benefits are sometimes higher is that some public employees (about one-quarter of the US total) are excluded from the national Social Security scheme, so their payouts tend to compensate for the lack of Social Security coverage. Another reason given is that public employees must often contribute to their own pension systems: for instance, US federal workers contribute at least 5 % of pay to their pensions, and higher rates (6 –7%) apply to teachers, police, and firefighters. Rarely are US private sector employees in DB plans required to

¹⁰ A recent study by Clark et al. (2000) shows how the early US Navy retirement system was based on the level of war spoils the sailors brought in (more of a DC plan, in effect).

contribute to their own pension plans out of post-tax income, and so, the argument goes, the higher contributions imposed in the public sector can finance higher benefit levels.

One problem that sometimes emerges in the public sector pension arena is that both benefits and contribution rates are sometimes set without ensuring that these rates are compatible with full funding of the plan in the long run. For example, a plan that sets some fixed low contribution rate for employees and employers may be unable to generate sufficient assets to pay out a particular defined benefit formula. This sort of shortfall risk arises for any number of reasons, but it will happen in general terms because a DB pension promise is inherently dynamic. Hence there will always be some requirement to adjust contribution and benefit rates in a world where underlying experience differs from *a priori* assumptions regarding salary growth, turnover and retirements, mortality, interest rates, capital market performance, and inflation (as well as other factors examined in actuarial plan projection and funding exercises). Therefore when pension benefit and contribution rates are set by law, in a country's Constitution or statute, this substantially hampers the actuaries' ability to keep a DB plan at full funding. A more flexible way of ensuring plan viability would have explicit rules to handle DB plan deviations by implementing contribution changes, sometimes with shortfalls amortized and smoothed over a reasonably short period of time, to target full funding in the long term.

Another problem often encountered in public pension plans is that governments have sometimes exerted suasion over the selection and application of actuarial assumptions. This occurred for instance with Governor Christine Whitman of New Jersey, who reduced the size of the State's fiscal problems by altering the discount rate assumption used to value the pension plan's funded status (Bryan, 2000). The role of actuarial assumptions is absolutely central to the question of how well a plan is funded, and its importance cannot be overstated. For example a "rule of thumb" in the pension business suggests that a 2 percentage point fall in the pension plan's assumed discount rate can boost liabilities by 25%. It is also the case that actuaries in the DB business must draw sensible conclusions about the entire set of assumptions that must be employed in the DB pension valuation process. In view of the key role played by assumptions in the DB context, it is important to know which assumptions are used, how they each and jointly can be justified, and the sensitivity of the plan's funding status to changes in any one, or set of several, assumptions.

Despite the fact that the DB pattern has been the norm in many public sector plans for the last 100 years, this model is showing signs of wear and even breaking in many developing and developed nations. It is therefore interesting that there may be more diversity today than ever before in public plans, in terms of the many different design types and structures they encompass. For example several public sector entities have "experimented" with pension reform in a wide range of ways. At mid-2000, one expert found that 28 of the 50 US states had enacted legislation permitting public employees to elect a defined

contribution pension plan as a second- or third-pillar benefit plan, and several other state groups have also indicated an interest in moving in this direction (Kaller 1999). The impetus to add a DC tier to the public plan offerings is often described by state administrators as a way of adding to public pension benefits while at the same time making downstream costs more predictable and controllable than in the past (Eitelberg 2000; Fore, 2000). A few municipalities have gone even farther in this direction, offering only a DC plan without any DB plan. An interesting variant on the movement to DC plans was recently implemented in Florida, where the State offered public employees an initial choice between the conventional DB plan or a new DC pension financed by a 9% employer contribution. Then the State further will allow participants to switch *back* to the other plan, should they wish, at one more opportunity prior to leaving their jobs. This switch-back option raises interesting questions regarding the value of this choice to employees, the potential cost to the state taxpayers, and the delicate issue of how to price such a buy-back (Lachance et al., 2000)

The last decade has seen a new “hybrid” type of pension in the pension scene, namely a **cash balance** pension. This new sort of plan has elements of both DC and DB, and it was adopted over the last decade by many of the largest Fortune 500 companies in the US (Clark and Schieber 2000). Making it seem like a DC is the fact that the employer promises to deposit a specified fraction of each employee’s pay into the plan. What makes it a DB in spirit, however, is that the employer guarantees the principal and also promises that plan assets will earn some relatively low but guaranteed rate of return each year (e.g. Treasury +1%).

There are several positive aspects of the cash-value plan design. One is that employees feel a sense of ownership since they receive periodic reports on their accumulations and feel less exposed to capital market risk than in the pure DC case. Relatedly, these accumulations are owned by the workers (after meeting a vesting criterion), benefit accruals rise smoothly with pay and service, and they permit mobility with lump sum cashouts if a worker leaves his employer. Cash balance plans are unlikely to encourage early retirement, inasmuch as accruals continue to rise smoothly with age, and for some employers this is an appealing alternative to DB pensions. Finally since the funding requirements are clearer, the cash balance plan may provide a fiscally more affordable pension promise as compared to DB models. On the other hand, it must be recalled that cash balance plans remain DB pensions in the sense that a plan sponsor has guaranteed the specified investment return. As a result, the sponsor bears underfunding risk and should select assets are appropriate to the structure of promised liabilities. In reality, however, plan sponsors often overlook the importance of the cash balance guarantee when setting investment policy, leaving them vulnerable to funding crises in years to come (Gold 2000). Nevertheless, such plans will likely become more appealing in the public sector in years to come, inasmuch as their accounting and funding are somewhat simpler than for the traditional DB final-pay-based pension.

Public pension reform sometimes takes a rather different tack, where public sector employees are folded into a national mandatory old-age retirement system. For example, Federal civil servants in the US now have first-pillar coverage through the national Social Security system, along with second-pillar coverage through an employer-based DB plan, and third-pillar coverage in the form of a contributory DC plan. (This has been in effect since 1984 for all new hires in the US military and Federal personnel; Mitchell et al., 2000). Japan and France also have strong central governments that enabled these two countries to integrate their public sector workers into the national pension system relatively smoothly (Bertoncino and Flanagan, 1999; Asher, 2000).

This brings up the important but not very well-studied issue of political economy, regarding the process whereby federal and state governments interact during the public pension reform process. A key important concern in this regard is that in order to move underfunded state and municipal plans into a national first-pillar benefit program, policymakers have had to confront the question of how to finance *acquired rights* under the old public sector employee plans. Efforts to integrate public employees into a national old-age system have experienced variable success, with particular problems arising in Argentina and Colombia. In Colombia, it appears as though the federal government has not yet developed the political clout to require localities and states to get their fiscal houses in order, in exchange for the federal government taking on the unfunded obligation of the public plans (Acosta and Ayala, 2000). A similar problem has occurred in Argentina though the legal structure for integrating the various pension systems was legislated in 1993 (later modified in 1995; IADB 1996). Specifically, the Federal and provincial governments in Argentina signed a pact to transfer the provincial pension “cajas” to the federal government, in exchange for modernization of provincial fiscal and tax systems, privatization of state enterprises, overhauling of the national social security system, and correction of fraud and abuse in the state pension rolls (as well as evasion). Nevertheless, the Argentinian reform process has moved rather slowly after the Federal takeover of the unfunded pension liabilities, particularly the efforts to restructure the provincial budgets and the national social security system (which even was found to lack its own actuarial analysis). Related problems have arisen in India, where the many dozens of local and state plans have substantial underfunding and excess benefits given available revenues making it difficult to integrate them into the national old-age plan (Asher, 2000).

In any event, many public plan experts find attractive a multi-pillar concept where public employees are integrated into the national social security system, at least far as the first-pillar level of old-age support. On top of this, a second-pillar funded DC pension (or a variety of DC accounts) could be layered depending on the employee’s and employer’s ability to pay and interest in a funded account. A two-tier structure of this sort can be better adapted to a more mobile workforce, it makes public and private pay more readily comparable, and it takes advantages of scale economies available to pensions

managed at a national (or perhaps even a supra-national or regional) level. Such a system would also provide the minimum floor of protection important to economic security in old-age, and probably be less costly and more efficient than the current alternative. The cost-saving results from having fewer pension plan entities requiring technical assistance and supervision, a single reporting and accounting system, and the clear advantage of easing worker mobility.

C. Why fund a public pension promise?

As noted earlier, a pension promise represents a long-term contract between an employer and plan participants who either give up current salary directly (through salary reduction plans) or indirectly (through foregone earnings) in exchange for a claim in future retirement benefits payable by the pension plan.¹¹ In the context of the public pension plan, trust law and international actuarial practice holds that a pension promise is **funded** to the extent that assets are held *in trust* in a segregated account, in an amount sufficient to finance promised future liabilities. From this perspective, the public pension obligation is a “collateralized general obligation bond of the sponsoring public entity” to the extent that fund assets add security to the promised benefits (Peskin 2000: 197).

Determining Pension Plan Liabilities

Collateralizing a pension promise requires the plan managers to first assess plan liabilities, a task often undertaken by actuaries who are expected to conduct plan valuations on a periodic basis. In the case of a DB pension, assumptions about future trends play a key role in determining plan costs, particularly regarding current and anticipated distributions of employee age, service, and compensation patterns along with demographic assumptions related to mortality, disability, and probabilities of retirement. Furthermore, economic assumptions are required regarding wage increases, inflation, and projected rates of return on plan investments (Hustead, 2000a). The resulting valuation yields an estimate of the public pension plan's liabilities and funding consists of the contributions required to finance them in an orderly and systematic manner through time (Mitchell et al., 2000). In a traditional DC plan, assets are by definition equal to plan liabilities, so a DC plan is generally considered to be fully funded.

In the real world, public DB pension managers do not always do a thorough job of assessing and aligning plan assets and liabilities, perhaps because they are not asked to do so. Alternatively sometimes plan managers are not required to report at all: for instance in Brazil, two out of four large state pensions recently examined proved to have very poor records regarding participation, benefit promises, and assets (Rabelo, 2000). Furthermore, public pension actuaries are frequently given important latitude regarding the assumptions they use in valuing the plans, and they may also exercise some judgment regarding which method they use to determine a pension plan's liabilities. In practice, too, public sector employers often

¹¹ This section draws on Hustead and Mitchell (2000).

employ actuarial methods and assumptions that smooth year-to-year fluctuations in contributions, even if this produces shortfalls in funding and inadequate assets from time to time.

For all these reasons, the liability position of any given public plan may be difficult to obtain. To make public plans more transparent over time, there has been a concerted drive in the US by the Government Accounting Standards Board (GASB), and internationally by the International Accounting Standards Board (IASB; <http://www.iasc.org.uk/>). In general, the goal has been to make public pension liability reporting conform to common standards so that plans can be compared more readily.

Determining Pension Plan Assets

Turning to the other side of the pension balance sheet, it appears that some public pension plans have substantial assets, while others have very little backing the benefit offerings. Also establishing a coherent policy in this arena is far from simple, partly as a result of different historical practice. For instance in some countries it is acceptable for DB public pension plans to value an equity or bond at its purchase price, though according to the Government Accounting Standards Bureau (GASB) this causes an over-optimistic portfolio valuation when the market takes a dive.

Assessing Public Pension Plan Funding

A “funded” pension plan is defined to be one with sufficient assets on hand to meet benefit promises. In other words, the funded plan is one that controls dedicated assets (A) sufficient to pay the present value of *accrued* expected pension liabilities (L). This funding concept is also known as termination funding, since the $A=L$ criterion asks whether a pension system can meet all its past obligations if the sponsor were to close down the system at some moment. Not only would current retiree payments have to be kept up, but also all past benefit promises made to still-active workers as of that date would have to be collateralized with system assets dedicated to the plan. Other funding concepts might be imagined, but this termination concept is the most conservative and widely used in terms of assessing whether a plan can meet promises accumulated to date.¹²

¹² This funding concept focuses on the accrued benefit obligation (ABO), or promises made based on past service and earnings. The ABO is consistent with the view of pensions that sees them as deferred compensation, and takes the termination perspective discussed in the text. An alternative concept, the projected benefit obligation (PBO), was for a time recommended in the public pensions context by the US Government Accounting Standards Board (GASB). By projecting what current employees might receive in the future at retirement after completing their expected work lives, the PBO helps estimate the system’s path of future revenues and obligations if the system remains in operation through time and the plan rules remain unchanged. Interestingly, the national Social Security system is required by Congress to produce a projected solvency measure similar to the PBO, even though US state and local plans are not currently required to compute or use this second measure. It has been argued that the projected concept may be more appropriate in the case of public plans (especially national ones) since they are unlikely to terminate; on the other hand the last century has provided evidence of public pensions running out of money, failing to pay promised benefits, and in effect going bankrupt. As a consequence, we would argue that the termination concept is a useful one in the public arena, as well as in the private sector.

In the international context, a wide range of funding patterns can be discerned across public pension plans. For example, most US state and local DB plans are currently relatively well funded, a rather remarkable feat given massive shortfalls of only a few decades ago. Public plan liabilities have grown steadily as their workforces aged, but contributions and investment earnings until recently produced assets amounting to about 90% of liabilities, on average. Higher funding ratios apply to the larger state and local employee plans (90-97%) as compared to systems covering teachers and public safety employees (82-88%; Mitchell et al., 2000). One explanation for this overall strong level of funding is that most public plans boosted their equity investments in the last two decades, a move complemented by the runup in stock prices through the 1990s. Whether this will be challenged by current market volatility is a question receiving serious and ongoing study. Nevertheless, US public pension plans are also continuing to meet 98% of their new funding requirements as they arise, suggesting a strong funding pattern for the future.

In light of strong US state and local funding levels, it is striking to contrast the substantial level of underfunding for US federal government pensions. That is, the federal government's plans are short US\$1 trillion, taking both the government's Civil Service (CSRS) pension plan (currently being phased out) and military DB pensions. This substantial discrepancy raises a key question: why do so many state and local pension systems boast a strong funding position, while federal plans are far less well collateralized? One explanation may be that state and local plans invested pension assets in equities when restrictions prohibiting this practice were lifted in the 1960's (previously most US public pension assets had been restricted to government bonds). As a result these plans benefited from the stock market boom experienced during the 1980's and 1990's, and today US state and local pensions hold only slightly less equity (59%) than their private pension fund counterparts (64%). US state and local plans also have some international equity exposure, though slightly less than in private pension plans (11 vs 14 %; Munnell and Sunden, 2000).

Another reason that state and local pensions tend to be better funded than national plans is that in relatively small geographic regions, it tends to be difficult to pass on unfunded liabilities to others. For example, when a pension benefit is promised to local police officers or firefighters, local residents may reasonably believe that these benefits must actually be paid or risk having local property values fall (or fail to receive safety and firefighting services). Hence voters might be willing to fund these pension promises made to safety and health officers in their own geographic region for fear of losing services later. By contrast, a taxpayer might believe that he could always defer (or avoid) paying for a national military or civil service pension promises, in which case the national plan could be operated on a partially or indeed completely unfunded (PAYGO) basis. Alternatively, politicians might be willing to pass these burdens on to future generations through implicit pension debt, as long as strong economic and

demographic growth makes this politically feasible. However when productivity falters or fertility rates fall, the long-term obligations imposed by an unfunded system could have a more economically troubling effect.

D. Transitioning From Unfunded to Funded Pension Plans

One of the most difficult challenges confronting politicians and public pension plan managers is how to manage the transition from an unfunded plan to a funded one. As well known in the pension literature (McGill et al., 1996), in an unfunded scheme today's workers agree to support today's retirees in the expectation that when they retire, tomorrow's workers will in turn support them. Once this system is in place, moving to a funded system requires either benefit cuts and/or contribution increases.

In practice, how these costs are borne must depend on the specifics of the transition plan, and a wide range of options is available. One approach require today's workers to "pay twice": that is, continue to support today's retirees, while also contributing something additional to build up a funded invested account on the worker's behalf. A different approach would cut payments to today's retirees, enabling workers to invest more of their contributions in funded accounts. Intermediate and perhaps more politically palatable approaches might spread transition costs across both retirees and workers, and also spread them into the future by having as yet unborn taxpayers bear some of the cost. How valuable these alternatives are, in terms of social welfare, depends on how constrained today's workers are in terms of access to capital markets, how myopic consumers are, and how willing tomorrow's workers are to support their parents in retirement (Geanakoplos et al., 1998, 1999).

An area of recent discussion in this regard has to do with so-called "DROP" plans, or "deferred retirement option plans". This refers to a public plan feature where members are in effect permitted to initiate retirement payments while remaining on the job (Steffen, 2000). Specifically, the DROP plan permits an older employee to "freeze" his final retirement benefit after attaining some number of years of service, while he continues to work in his public sector job. The monthly benefit that *would have been paid* then accumulates with interest in the employee's tax-qualified individual account; when he actually retires, he then receives a lump-sum payment as well as the monthly pension benefit amount from that time onward. Participants often appreciate a lump sum payment at the time of retirement, a feature that the DROP plan offers. Employers like the fact that the eventual monthly retirement payment is frozen based on pay and service as of when the DROP option is elected, providing them with the ability to predict employment vacancies more reliably. In other words, while the DROP is in effect, ongoing employment does not increase the final pension benefit. Whether the net financial cost incurred under this arrangement is larger or smaller than the old arrangement depends on several factors including its impact on retirement patterns, the employers' desire to have workers remain on the job longer, the interest

rate paid on the lump sum, and whether this also reduces the employers' burden for other benefits (e.g. retiree health care costs).

No unique approach to solving the transition problem will work automatically in the public pension environment, since the weighting of costs and benefits affecting different cohorts requires a political calculus that each country and perhaps each pension system must resolve. Nevertheless, it is useful to illuminate some of the factors that can help make the transition costs more bearable, in the process of public pension reform. These include adjustments usually described as "parametric" changes (Schwarz and Demirguc-Kunt, 1999) inasmuch as they involve adapting and changing the old DB system parameters.

Among these parametric changes would be included methods of enhancing system revenues to lower the degree of underfunding, and they can include extending the definition of covered compensation (e.g. bonuses as well as basic pay), boosting both the tax rate and earnings limit (if any), increasing the number of years required to contribute to the system, and raising other taxes dedicated to the public pension system. In addition, techniques are often adopted to cut system costs, also cutting the extent of underfunding. These generally include curtailing promises, for instance by raising the retirement age and linking it to the life expectancy thereafter (as in Sweden), lowering the benefit formula, and limiting cost of living adjustments.

If parametric changes of this nature are insufficient to convert an underfunded DB plan into a funded one, more fundamental structural reforms may be attempted, and over the last two decades, many efforts along structural lines have been undertaken throughout Latin America (see Figure 1). In Chile, for example, hundreds of "cajas" (DB pension schemes) along with the national Social Security system confronted bankruptcy in the late 1970's. These were then consolidated in 1981 into the national defined contribution pension system under the auspices of the privately-managed pension system. Large-scale structural reforms of a similar nature have subsequently been implemented in Argentina, Bolivia, Colombia, Mexico, Peru, Uruguay, and several other countries, making the Latin American experience with privatization in pension reform a model that many other countries seek to learn from (Barreto and Mitchell, 1997).

In many of these system-wide national pension reforms, Latin American nations have tended to recognize participants' "acquired rights" or accrued benefits in a variety of ways. Recognition Bonds are one such mechanism. These are government-issued, usually non-marketable, government bonds representing workers' claims on a future retirement benefit, in recognition of past contributions under the old system. The issuance of these Bonds typically is carried out in tandem with parametric benefit reductions, higher retirement ages, and/or increases in contribution years. In such a case, the explicit obligation under the Bonds is often reduced as compared to the implicit benefit promised under the old

system. For instance, in Chile, active workers are required to hold their Recognition Bonds until retirement, at which time they may be redeemed them from the government. These bonds may not be spent all at once, however, but instead are payable as a life annuity based on the face value plus some government-determined rate of interest. Most importantly, the value of the Bond was set after lowering promised benefits under the old system (World Bank, 1994b). In Peru, Recognition Bonds generated by moving away from old unfunded DB plans to a national DC system were frozen in nominal terms at the time the new national pension system was set in motion. In general, then, Recognition Bonds tend to be used after curtailing the old public plan's implicit debt, making the system more solvent (Mitchell, 1996).

Even so, some have expressed concern that making implicit debt explicit might also make it more difficult for benefits to be adjusted in the future as necessary. A different approach to handle the acquired rights problem is to recast part of the public employees' pension as a partial guaranteed government payment payable from the (continuing) first-pillar government-run system. This was what Uruguay did and also what the US has done with its federal employees (Mitchell, 1996; Hustead, 2000). First-pillar benefits in Uruguay depend on past service and earnings covered under the payroll tax system ("sueldo basico jubilatorio"), so workers have the incentive to participate in the old system long enough to "earn" the base benefit. The problem is that the first-pillar benefit formula provides no return for annual pay higher than \$5,000, though employer and employee payroll taxes continue to be levied on salaries above that level. Of course this provides little incentive to report earnings over that level, even though it somewhat reduces workers' incentives to completely evade participation in the system altogether.

In summary, this section began by identifying the four key functions of a pension plan, namely collecting contributions (taxes), managing funds, providing recordkeeping and reporting, and paying benefits. To carry out these functions there are many types of public pension structures, ranging from defined benefit pensions that may or may not be integrated with the national Social Security system; plans that may or may not be contributory; and plans that may or may not be funded. In many countries the DB model has dominated public pension systems, but of late several US public employers have implemented a defined contribution pension plan as an additional tier, or in some cases have transitioned fully to a DC plan or a hybrid cash-balance in lieu of a DB program. In other countries, including Argentina and Colombia, there have been efforts to integrate public sector workers into the national DC pension system, but these reforms have so far gone slowly, from all appearances. We also discuss the definition of funding, and rationales for and means of moving to a funded public pension system, including the costs of not funding and the ways in which accrued rights can be managed.

IV. Stakeholders in the Public Pension Arena

In this section we identify who the stakeholders are in a public sector pension system, what this means for relationships between interested parties in the pension contract, and what this implies for managing public pension plans.

A. Who are the stakeholders in public pensions?

The central stakeholders in any pension system are the pension plan *participants*, by which we mean active workers as well as retirees.¹³ As plan participants, these individuals naturally have the most direct interest in how their pension plan is managed and governed, and indeed Western trust law holds that a pension plan must be managed *solely in the best interests of the plan participants*.¹⁴

In the public sector, there are also several other parties with an interest in the design and operation of the public pension plan. As a rule, the public sector employer(s) sponsoring the pension maintain a strong interest in the way the plan works, how expensive it is to run, and how the pension assets perform plan (to the extent the plan is funded). Employers are also directly concerned with how the pension plan performs in terms of recruiting, training, and retaining governmental employees, how well these employees understand and appreciate their pension, and eventually the role of the plan in providing employees with an incentive to leave the plan at retirement. Employee representatives are often also keenly interested in the operations of the pension fund, sometimes seeking influence negotiations over benefit and contribution formulas, and other times becoming involved in controlling pension assets.

In addition, the list of public pension stakeholders can be extended to include a myriad of other state and federal entities interested in and influential over public pensions for a wide range of reasons. Depending on the country and the time period, these could include *legislative bodies and regulators, tax authorities, investment managers, and other entities charged with budgeting in the public domain*. In the US for instance, the Internal Revenue Service (tax authority) plays a key role in determining what pension contributions may be set aside on a pre-tax basis, and in allowing the inside-buildup to be similarly tax-free until the payout phase. Lawmakers also play direct roles: for instance, the Florida State Legislature held hearings on and eventually implemented a major reform in that state's pension system covering 600,000 teachers, municipal workers, legislators, and other public employees (Trager et al., 2000). In New Jersey, former Governor Christine Whitman actively selected pension assumptions that improved the state DB plan's funding status, coincident with needed financial relief in the NJ state budget (Bryan, 2000). Other government entities may also become deeply involved in public pension design issues, as for instance when military human resource specialists alter pension retirement incentives to offset a decline in military ranks (Hustead and Hustead, 2000).

¹³ In addition we would include in the set of stakeholders any terminated vested participants, as well as people in benefit status including survivors and dependents of deceased participants.

¹⁴ This holds for private sector employees under US ERISA law and also applies in the UK.

Last, but certainly far from least, it is essential to acknowledge the role of and interests of taxpayers, an underappreciated but nevertheless key stakeholding group in the public pension arena. Taxpayers become important in the public pension business when states and federal entities find them must raise tax revenue to finance pension shortfalls, if other sources of pension financing are lacking.

B. What are the implications for public pensions?

The fact that so many and varied stakeholders are involved in the public pension context gives rise to potentially quite sharp political disputes over how to design, to pay for, and if necessary to reform the system in question. But behind all these disputes remains the fact that changing a benefit or financing rule always has some financial impact, one that many politicians and political agents tend not to be able to assess and finance. A related point is that the long-term consequences of benefit enhancements often seem easiest to overlook in DB plans. This is because DB plans are not transparent, and as Steffen (2000: 55) notes, “what may seem like a reasonable but small adjustment to the system at present, can later result in a significant increase in costs over the long term for all future employees”. Expanding a DB benefit promise imposes more financing needs now and also in every future year as well, such that pension promises can have a duration of decades or even a century. Of course, this is usually a far longer time horizon than most politicians worry about in practice, making most stakeholders unwilling to confront the longer term consequences of enhancing DB system benefits.

The question, of course, is who is at risk if politicians offer shortsighted and underfinanced DB pension promises that later cannot be paid. Various possibilities may be envisioned. One is that pension participants might suffer benefit cuts. If this were potentially a concern, plan participants (and their agents) should find it in their interest to secure periodic actuarial assessment of the public pension promises, require full funding of the plan to protect retirement payments, and mandate prudent management of available pension assets to increase the probability of the payouts being met.¹⁵ In other words, placing the participants at risk is likely to boost employees’ interests in making sure the promises are financed and well-managed through time, as long as the employees (or their representatives) are sufficiently well-informed to require that prudent pension norms be implemented by plan management.

Another scenario could evolve if taxpayers were required to make good on overpromised but underfinanced DB promises in the public pension arena. In Canada, for instance, public pension promises are widely believed to be backed by state and even Federal constitutions, making the taxpayer the ultimate backer of the pension promise (Pozzebon, 2000). Similarly, the view that taxpayers must support public pension promises in Brazil has of late become a major problem, inasmuch as the high

¹⁵ An alternative is for the public employees to demand a risk premium to help compensate for the additional risk associated with the underfunded pension plan. There is some evidence for such a risk differential in the state of Pennsylvania, found by Smith (1981) ; how widespread this phenomenon may be is not known.

benefits and low tax bases limit further revenue-raising without major economic disruption (Hornbeck, 2000).

To the extent that taxpayers recognize that they are “on the hook” for public pension promises, they should take a more active interest in public employee compensation promises of all sorts. Even when they do not take a direct interest, a financial impact will likely be felt if some market mechanism is available to reflect this risk. One way this has happened is when unfunded pension obligations become capitalized into property values, as seen in several US states where public pensions were quite substantially underfunded (Eppel and Schipper, 1981). In other words, peoples’ housing values fell against the likelihood of having to raises taxes to pay for the public pensions in the future. Another way pension risk can be expressed is via municipal or state bond and credit ratings, where greater risk associated with pension underfunding influences the market for funds (Inman, 1990). In other words, the fact that many different stakeholders become involved in the business of public pension design and financing does not change the hard reality that making promises without paying for them does not ensure a “free lunch”. Rather, doing so imposes potential costs on the various stakeholders that take on economic significance, even if sometimes in unexpected ways.

The extent to which these effects are seen in developing countries has not been explored empirically, though they are likely to be substantial. That is, high expected tax rates will depress business interests in selecting any given location, and high tax rates can increase labor market ‘informality’ given the easier opportunities for tax evasion that often obtain in developing country economies. Hence it is to be expected that underfunded public pensions will have important and probably undesirable spillovers in the poorer as well as the richer nations. In the extreme, public pension plans can go bankrupt or simply stop paying benefits: this occurred most recently in China where state-owned enterprises have been unable to keep the pension promises made to workers in the past.

C. How centralized should a public pension plan be?

How centralized or decentralized a public pension system can be is, in part, a reflection of the roles played by the various stakeholders. For instance, in California, there is one public pension program for all state government employees, the well-known California Public Employees Retirement System (CALPERS), which is the largest funded public DB plan in the country. Other large, consolidated, state-wide pensions cover public employees in several populous states such as New York and Florida, but Pennsylvania has 2000 systems covering individual police, firefighter, teacher, judicial and other groups in a wide range of towns and cities. Looking internationally, Singapore runs a single public Provident Fund on a national level, while Brazil has over one thousand different plans.

An examination of how pension systems work points to several factors favoring centralization of pension administration. Most importantly, many of the key pension tasks are managed better with

centralization, including recordkeeping and reporting, investment management, and benefit payments. For example, empirical analysis of US public pension administrative costs shows that total per-member costs averaged \$211/member/year across all plans, but were only one-third that size in a dollar-weighted computation (in \$1997). In other words, larger plans incurred substantially lower expense on an annual basis (Mitchell, 2000). Furthermore, investment expenses computed as a fraction of system assets totaled 44 basis points (0.44% of assets) overall, but fell to only 27 basis points for the dollar-weighted total, again indicating substantial scale economies. Since small differences in administrative fees can translate into extremely large benefit payouts, the advantages of scale must be very central in deciding where to manage a plan. Recognition of such scale economies led Mexico to establish a single national organ to collect information and supervise centrally all employers contributing to the national mandatory DC system recently implemented (Cerdeira and Grandolini, 1998).

Some might also emphasize factors favoring pension decentralization, where workers and their jobs are heterogeneous. To the extent that a public employer might want to shape a pension offering to meet workforce needs, it may seem easier to do so in a decentralized format. For example, some risky occupations (e.g. police) may provide members a pension at especially early ages, whereas other public groups might offer generous disability benefits to those injured in the line of duty. Along similar lines, war veterans in some countries (e.g. Nicaragua) were at times awarded lifelong pensions from an early age, as have others who served their country in times of special need.

While these benefits may seem appropriate at the time, they often prove to be overly costly and financing them economically unsustainable in the long run. The most important pitfall here is that benefit enhancements are easy to promise while long-term costs go under-recognized by the political process. This can bring about pension underfunding, an inability to pay promises made, and generate extraordinarily high tax burdens on the working population. In addition, uneven benefit formulas and eligibility criteria can be an important obstacle to smooth movement of employees across public sector jobs. For example, teacher shortages in one sector of the country might sensibly be met by relocating teachers from another region, yet conflicts between pension structures for teachers in different states can impede this sort useful and desired labor market flexibility. Finally, non-flexible pension structures can also limit efficient movement between public and private sector jobs, as when pension rules serve as an obstacle to having eminent private citizens serve the government, and vice versa.

Some of these mobility problems arise because DB plans are usually ill-suited to permit worker movement across employers. This cannot be seen as a design “flaw,” since most DB plans were intentionally engineered to deter labor mobility. Yet in an increasingly-mobile labor market, workers are less likely to find DB plans appealing for this reason. Employers too may find the more flexible DC-type

plans more suited to their workplace needs, inasmuch as these may mesh better with performance-based compensation schemes that will increasingly be used in the public as well as private sectors.

In summary, in this section we have identified the stakeholders in a public pension system, what the implications are for the way a public pension system is managed, and some of the issues that arise when deciding the ‘best’ level at which to design and manage a public plan. In general, centralization of public pensions tends to cut administrative and investment costs, ensures more accurate accounting of benefit promises, and is the most efficient in terms of labor market consequences. In addition, DC plans – particularly at larger scale – can be more cost-effective than DB plans.

V. Governance and Investment in the Public Sector Pension Environment

In this section we discuss what public pension plan governance is, define what is meant by pension fiduciary standards, and outline the key challenges in the public pension plan investment arena.

A. What is pension governance?

A well-functioning public pension plan would be governed by a management structure ensuring that operations are well-managed and managers accountable, just as in a for-profit (and non-profit) organization. In practice, public retirement systems tend to be run by a public retirement Board having authority for decisions related to pension financing, system operations, actuarial valuations, and in some instances investments and plan benefits provided. Depending on the plan and the country in question, day-to-day administration may be handled by a dedicated pension system staff, or by employees of the government entity sponsoring the system.

Thus far relatively little is known about public pension governance structure and its impact on pension outcomes. In developed countries, decisions regarding the structure and composition of these public pension Boards can become quite political. For instance, in the US, most public Board members are appointed by politicians or serve *ex officio*.¹⁶ This practice is similar to that of Brazil, Malaysia, Singapore, and other countries (Bertoncino and Flanagan, 1999). The role of politics is highlighted since these Boards undertake a wide range of financial and related tasks including paying benefits, administering the plan, setting pension investment policy and often bearing responsibility for asset allocation and actuarial assumptions needed to determine plan funding and contribution obligations (Mitchell et al., 2000).

In the US, DB public pension plans tend to be run by a Board ranging in size from one to two dozen; however the “typical” size is around eight people with more for larger systems (e.g. state employees and teachers tend to have 9-10) and fewer in systems serving public safety and general local

¹⁶ Some systems, such as the Iowa Public Employee Retirement System, operate without a board of trustees, relying instead on authority vested in a senior official of the sponsoring agency (Mitchell et al., 2000).

employees (7-8). It is also worth noting that Board composition depends on the type of covered employees, so that plans covering teachers and public safety employees have more elected members and fewer appointed members than do systems serving general state and local employees as a whole. Still, day-to-day administration tends to be carried out by a pension staff under the supervision of the Board executive director or plan administrator, though in very small plans the sponsor's finance or human resources department may carry out the tasks. Public pension staff sizes range from a single individual working part-time, for a very small plan, to more than 200 staffers for plans covering several hundred thousand public employees. In general, the average public plan has about 2.6 staffers per 1,000 active members, with the larger systems including state employees and teachers averaging 1.5 staffers per 1,000 participants, the lower number reflecting economies of scale.

In a case where public employees participate in a DC rather than a DB pension plan, the role of the pension Board is of necessity rather different in spirit. In the case of the US Civil Servants TSP, for instance, the Board focuses on selecting which asset investments each individual participant may invest his contributions in, including (e.g.) a stock index fund, a bond fund, a money market account, and perhaps a government securities account. The DC Board is also charged with selecting the fund money managers and record keepers, ideally using competitive bids to ensure that the funds made available are performing as intended and curtail costs to a minimum. In this way the individual participant has substantial freedom regarding where to invest his money, but the Board retains the authority to select and terminate money managers based on service and performance.

B. What are pension fiduciary standards?

Public pension Boards, when they are working well, manage the public plan as **fiduciaries**, governing the plans "*in the participants' best interests*". As noted above, US public pension systems have responsibility for overseeing pension investments and as such, must operate under fiduciary standards to ensure that assets are on hand to pay promised plan benefits. In the US private sector, corporate pension fiduciaries must also meet additional standards set by the Employee Retirement Income Security Act of 1974 (ERISA), requiring that private pension funds must be invested using the "care, skill, and diligence" of a prudent individual acting "solely in the interest" of plan participants.

Though this Federal "prudent person" regulation does not formally apply to state and local pension plans, it is interesting that almost 90% of all public plans have adopted virtually identical language, meaning that the spirit and philosophy of Western trust law is carried over to the public sector, too. In addition, two-thirds of public pension Boards now require written ethical standards that members must abide by, limiting conflicts of interest; these standards have been championed by the California Public Employee Retirement System in recent years. Finally, in the public sector virtually all plans have adopted an obligation to prepare annual actuarial valuations and are subject to annual actuarial audits.

Additional controls are in place to ensure widespread use of annual independent investment audits. All of these reporting and disclosure requirements contribute to a more transparent public pension environment for all concerned stakeholders.

C. Public pension plan investment impacts

Public pension Boards serve as the appointed or elected agents for government and pension system participants, and as such they are the fiduciaries responsible for the plan's asset management task. It stands to reason that no public pension governing board would be expected to deliberately drive its assets down, nor its costs up (Useem and Mitchell, 1999). In other words pension trustees are expected to share the same objective of enlarging the plan assets within the limits of prudent investment risk and reasonable administrative cost.

In practice, of course, retirement systems engage in widely varying investment strategies, some of which directly or indirectly affect public pension financial performance. After reviewing Latin American pension systems, Srinivas and Yermo (1999:1) conclude that regulatory regimes "create distortions in asset management, limit opportunities for diversification, and as a consequence, hamper the performance of pension funds." Those authors recommend that governments should instead press for market indexes and benchmarks, and require money managers to forecast likely benefit replacement rates at retirement instead of focusing on contributions and investment restrictions.

To determine how these influence outcomes, it is of interest to examine key investment decisions that pension managers make, and about which empirical evidence is readily available (Useem and Mitchell, 2000). In a recent survey on US public plans, three-quarter of the public plans were found to use long-term considerations in deciding on their asset allocation criteria, rather than "tactical investing," in accord with varying economic conditions. Also over three-quarters of all state and local systems outsourced their assets management; some plans held a substantial portion of their investment assets in equities; and most public plans have not invested much outside the US.

It is also important to examine areas of pension plan governance where the impact on investment strategies is potentially greatest. The first has to do with investment restrictions that currently apply to only one-quarter of all US public plans. The second indicates whether the pension fund conducts an independent annual evaluation of its performance; the third asks whether the pension Board sets asset allocations and whether the board is directly responsible for investments; the fourth focuses on the size and composition of the board on the groups that a pension fund with a smaller Board might be expected to stress tactical investing and to outsource asset management, while the fraction of trustees who are themselves active or retired members of the retirement system may affect the actuarial assumptions followed by the pension fund .

The results indicated that good governance practices did influence public pension plan investment strategies, and investment strategies in turn shaped the financial performance of the investment portfolio. Four governance policies – investment restrictions, performance evaluations, board purview, and board composition/size – proved to have an important link with public plan investment strategies. Two of the investment strategy variables, notably equity and international investing, were associated with higher fund performance the following year, controlling for other factors. These findings suggest that asset allocation accounts for a large element of the difference in returns among retirement systems and the magnitude of these effects is substantial. Some governance policies have more important impacts on pension fund performance: for instance having regular independent evaluations of system investment strategies and few restrictions on those strategies is likely to be beneficial.

In addition to assessing how governance structure influences DB public plan investment policy, it is also of interest to ask how the specific nature and mix of DB public plan liabilities might influence investment practice. Michael Peskin, a prominent actuary and investment manager, argues that the proper objective of the pension manager should be to “provide intended benefits at the lowest cost”, achievable by “integrating assets, liabilities, and funding within a corporate finance framework” (2000:195). Specifically, he advocates matching pension asset durations with plan liability durations, for example backing cash payments to retirees with long-term bonds, while using more equity-like instruments to fund benefits promised to those workers not-yet-retired. Such an approach can make the long-run financing of the plan more economical, and reduce taxpayers’ risk of having to boost DB plan contribution levels suddenly and unexpectedly.

D. Controversies regarding public pension investment policy

For several reasons the investment practices of public pension plans have come under scrutiny in the last few decades. One is that governmental entities have sometimes failed to hold pension managers to prudent person fiduciary standards, instead imposing caps or upper limits on the types of assets held in public plan portfolios. For example, in Canada, public plans are prohibited from holding more than 20% of their assets in non-Canadian assets (Pozzebon, 2000). Similarly some US public sector pensions face restrictions in terms of maximum ceilings that can be held in certain forms (e.g. venture capital), and systems in many other countries are likewise constrained (Palacios and Iglesias, 2000). Asset investment in Japanese pension funds until recently were restricted mainly to fixed income domestic holdings, due to regulatory caps known as the “5-3-3-2” limits. These were government regulations that required trust banks to hold no more than 50% of the assets in guaranteed assets (bonds), a maximum of 30% in domestic stocks, 30% in foreign assets, and 20% in real estate (insurers were held to the 3-3-2 limits; Mitchell 1999). As a result, many Japanese pensions experienced very low (and sometimes negative) real returns over the years and have as a result faced serious underfunding problems.

Alternative mechanisms to control pension investment risk would include the “prudent man” rule under which pension plan fiduciaries can be held personally liable if the plan is not managed for the sole benefit of the plan participants (Mitchell et al., 2000). This is easier if the pension system is required to mark its assets to market (e.g. daily, as in the US 401(k) pension world) and make public any key assumptions regarding liability and investment accounting. And perhaps equally important, if pension participants have the ability to move their funds from one pension plan to another, and to sue managers if necessary, this may have a beneficial impact on retirement system investment management and performance. It is likely, in this context, that having competition across fund managers will in the long run impose downward cost pressure on the system as a whole, thus reducing fees and increasing net assets available for investing.

In general, plan stakeholders must learn to take responsibility for monitoring system performance and exercise their rights to “exit” a specific fund should performance be unsatisfactory. A companion approach would require public pension Board members to purchase trustee insurance which has the effect of enhancing pension funding and raising investment returns, probably because insurance premiums rise where pension system malfeasance is apparent (Hsin and Mitchell: 1994, 1997). In this way, the insurer can function as an agent for the stakeholders to improve fund management.

In the DC pension context, it is often easier for the pension manager to avoid direct confrontations regarding pension investment options, since selecting the portfolio mix is generally left to the individual participant within the menu of offered investment options. Nonetheless, even in this context, pension investment issues can become critically important. One reason is that the plan sponsor still bears some responsibility for employee financial education, helping participants understand risk and return and the importance of investment diversification. Another is that if markets falter, participants may worry that they have insufficient funds to retire on and some might seek benefit guarantees from their plan sponsor. In fact some DC pension systems implemented in the Latin American context have actually adopted minimum return or benefit guarantees, benefit floors that are thus far not well understood nor pre-financed in any careful way (Pennacchi, 1999). Hence a public plan sponsoring a DC pension with a guarantee may become vulnerable to investment fluctuations, if due care is not exercised to ensure that the DC is not converted into a DB promise.

In summary, this section describes public pension plan governance, defines pension fiduciary standards, and outlines the key challenges in the public pension plan investment arena. Ideally in the case of a DB plan, the pension Board must make key asset allocation decisions with the pension liability position very much in mind. In the DC case, the Board must focus on which funds an individual participant may invest in, and undertake some investment education for the plan participants. In both cases a well-functioning Board must act in the participants’ best interests, focusing on investment risk and

return while seeking to hold down investment and other expenses. We also argue that holding pension fund managers to the prudent man rule, requiring competitive bids for investment and recordkeeping, and requiring regular independent evaluations of investment strategy and performance, have more positive effects on the plan participants than will government efforts to limit plan investments to one or a few assets.

VI. Implications for Public Pension Reform in Developing Countries

Ideally a public pension system – like a private pension system – should be self-sustaining and not experience repeated financing crises. Many developing countries have taken several steps to reform public sector pensions, as mentioned above, and they appear headed in the direction of making promises made more credible. However much remains to be done to provide sustainable and credible retirement benefits that are self-sustaining, equitable, and efficient for the various stakeholders.

Above we have suggested that many of the problems identified in a wide range of Latin nations could potentially be rectified by consolidating the nation's public and private first pillar old-age systems. Specifically, public employees could be integrated for pension purposes into the national DB plan to provide a first-pillar level of old-age protection. Next, a consolidated second-pillar plan could be established, one permitting funding, some investment choice, and worker mobility and portability for accruals above some minimum. An architecture of this sort was implemented recently for US Federal employees, with all workers required to move into the national Social Security system for basic benefits. On top of this, the federal government created a Federal Thrift Saving Plan (TSP) which is a funded DC plan offering employees several low-cost investment options, portability, and transparency (see Husted and Husted, 2000).

In order to build such a plan in developing nations, it would be necessary to centralize recordkeeping and improve the governance, regulatory structure, and investment environment in which the public pension system operates. Many have indicated that the environment for private and occupational pensions is in need of increased reporting and disclosure regarding investment management and performance, relaxation of investment requirements, and increased and more careful supervision (World Bank, 1995). Since most of these public plans require long vesting periods and do not currently permit portability, this undermines the plans' incentives to compete with each other to perform better and attract new customers.

It would appear that a few key issues must be resolved in order to achieve consolidation of public pension plans with a national retirement system. One problem has to do with the widespread dearth of information regarding unfunded liabilities burdening the Federal, state, and municipal entities. To remedy this problem, states and municipalities may be integrated into a central recordkeeping mechanism

in order to measure and track pension assets and obligations. This process is data-intensive, complex, and requires skilled actuarial input, so it is encouraging that this effort has already been launched in some states (Rabelo, 2000). It will, no doubt, require further technical and professional support to simply arrive at an assessment of public sector pension debt in the nation.

As a second step toward reform, the question of curtailing acquired rights must be resolved, or at least the structure be put in place to resolve it over time. This is a problem to the extent that some state systems were never conceived of as funded programs from their inception (Rabelo, 2000). Finding a solution for this underfunding will be an expensive and long proposition. It appears that the Brazilian Ministry of the Economy has the authority to “make transfers of tax revenues to states and municipalities from the so-called ‘Fondos de Participação’ contingent upon the clearance of their debts vis a vis social security” (World Bank, 1995). And also positive is the news that several Brazilian states have recently adopted required contribution rates for retired and active employees (e.g. in Amazonas, Pernambuco, Sergipe, Parana, Mato Grosso, and the Federal District; Pinheiro, 1999). Maranhão and Ceara are working to implement a similar plan, with feasibility studies underway in Sao Paulo, Rio de Janeiro, and Minas Gerais. A handful of states have apparently already created retirement funds to pay for the transition, with the most well-financed to date being Bahia that received R\$440M as a result of the privatization of the electricity and water utilities. However no state has sufficient state assets to fully fund its benefits promised to public sector employees, making this process a slow one at best (World Bank, 2000).

Some analysts working in this area believe that there is room for a larger federal government role, providing incentives for states and municipalities to join the national first-pillar system and thus to halt the accumulation of potentially non-payable benefits under the old defined benefits pay-as-you-go system. One possibility is that more could be done to foster the creation of positive externalities, and to assist plans in reaching a minimum efficient scale. For example, in Mexico, the Social Security agency has established a national record-keeping system that all employers must use to submit their contributions to the system. This also provides the data flow necessary for effective centralized supervision and data analysis, also centrally managed. Similarly in other countries, the federal government might provide technical assistance to the states and cities, ranging from compatible computer software systems, offering actuarial training and expertise, and instituting a national and common recordkeeping system. Another possibility is that federal governments could offer partial transition financing as an incentive to help states and municipalities reform and sometimes terminate their insolvent pension systems.

Despite the potential for federal incentives to assist the transition, the financial shortfalls facing most public pension systems are such that lowering benefits may be inevitable. This can be accomplished in several ways, by raising retirement ages, raising the number of years of contribution required, reducing

benefit indexation, and reducing evasion. This might also happen by terminating the various public pension plans, with some portion of benefits protected by offering a recognition bond which payable in retirement. Because most plan stakeholders recognized that the public underfunded DB promise is unlikely to be paid off in full, it is plausible that the bond needed to pay off this risky promise could well be substantially less than the expected value of the promise (Kane, 1995; Mitchell and Zeldes, 1996).

Another issue is that moving the reform process forward as well as the Brazilian pension system as a whole will require a central governmental structure to supervise and oversee responsibility for new state and local pension plans set up under the reform. One construct would move toward a national DC pension system operated under a single, centrally run, regulatory and tax structure similar to that adopted in Mexico (Cerdeira and Grandolini, 1998). Thus far public pension regulation in developing countries is often handled by several different institutions. For instance in Brazil, the Insurance Supervision agency (under the Ministry of Finance) overseeing so-called “open funds” and the Secretaria de Previdência Complementar (under the Ministry of Social Affairs) managing the “closed funds”. This creates duplication and potential conflict between agencies that could be rectified by concentrating the regulatory and informational oversight into the hands of a single government agency.¹⁷

Another approach might be to adopt a national cash-balance plan for public sector workers, where workers would have individual accounts credited annually with specified contributions and guaranteed rates of return on the funds. Above we have pointed out the pros and cons of a cash-value format, particularly the fact that they offer a principal and investment-earnings produce guaranteed by the plan sponsor. But this guarantee has pitfalls as well as benefits, since stakeholders tend to be unaware of the downside liability that such a promise can impose.¹⁸

A related and very supportive development would be the adoption of clear and systematic tax regulations as well as rules permitting portability and competition in pension management (Pinheiro 1999). There is uneven treatment in most developing nations, as to the tax status of various types of pensions, and it would be useful to streamline these regulations not only between private plans but also between public and private pensions. In some cases, state-owned pension funds charge far more for administrative costs than do their private-sector pension counterparts, with public plan costs running over 9% of contributions versus under 3% for multinational firms (World Bank, 2000). This differential should be rectified by requiring greater uniformity in reporting and recordkeeping, as well as by allowing

¹⁷ There is also some rationale for giving a single agency oversight over the private pension savings accounts (similar to US Individual Retirement Accounts) that are known as FAPIs, as well as mutual funds and other related savings vehicles. Recognizing the increasing overlap between banking, pensions, insurance, and saving instruments, Australia and the United Kingdom have recently adopted a more centralized regulatory structure for all these financial institutions.

¹⁸ In the extreme case, this type of plan can be completely unfunded, as in the case of Latvia and the second-pillar Swedish pension under the new reform.

participants to switch their deposits from one pension system to another, if costs seem unduly high. Similarly it has been argued that public-sector DB pension funds in the past over-invested in real estate, producing inadequate fund diversification and hence increasing risk (World Bank, 1995). The adoption of “prudent man” fiduciary rules of the sort described above would also have a beneficial influence on investment practices of the funds, though allowing participants to switch providers periodically would also have an effect on holding down costs.

A final issue to note, though one beyond the scope of the present study, is the urgent need to separate out what is properly payable as a *pension benefit* from other sorts of social insurance benefits that public plans have often paid in the past. For instance, the Colombian social security reform separated its pension from its health plan, from benefits payable by the disability and unemployment systems (Acosta y Ayala, 2000). Similarly, in Mexico, reforming the old-age system necessitated separating the pension program from the country’s national disability insurance scheme, the latter of which the government still runs. Such plan separation is generally advised so as to make each of the individual insurance programs operate more transparently, to reduce administrative costs, and to reduce cross-subsidization which makes all plans work less efficiently.

B. Next steps

This analysis has immediate implications for the path to public pension system reform in developing nations. In all likelihood, further progress will likely require progress along the following fronts to achieve a sustainable old-age system for public sector employees:

- Public-private comparability studies are needed to determine where public sector employees may be overpaid, and to judge how to better structure public employee compensation and performance measurement systems;
- Data must be gathered and analyzed to derive long-term solvency and funding estimates for the state and municipal pension systems over the next 50-75 years, as well as to evaluate which additional reforms would be most helpful in reducing the public pension systems’ financial solvency problems;
- It is often easier to manage a pension system when the public pension system’s benefit and contribution formulas are not prespecified in explicit legislation, as has sometimes been true in developing countries;
- Public sector employees could be more fully integrated into the national first-pillar DB contributory system, like private sector workers, instead of maintaining thousands of different unfounded and less-than-efficient existing DB plans;

- A national second-pillar contributory DC funded system could be established for public sector workers, one that is portable, affordable, and encourages household saving, while having a higher probability of paying benefits at a later retirement age;
- A coherent system of pension governance and performance standards could be implemented under central government guidance, including investment and expense benchmarks for pension managers to ensure top-notch performance and protect against political intervention in the investment process;
- The federal government generally must devise a recordkeeping and reporting system for employees covered by public pension plans. This can be linked to other datasources as well for recordkeeping purposes (e.g. mortality and tax information);
- Tax policy toward public and private retirement systems could be developed in a coherent, cost-effective and transparent manner to ensure enhanced reporting and supervision over contributions and asset management. This would also permit more participant choice in plan investment, enhance participant confidence in the system, and facilitate worker mobility.

In summary, these changes will improve the nature of the public sector pension promise in developing nations, while making it equitable, economically efficient, and financially solvent. In addition the reforms would benefit not only the employer and employee groups most directly associated with the pension systems, but also they could ultimately enhance the wellbeing of broader groups of pension stakeholders. These include not only taxpayers and consumers on whom the burden of high taxes and reduced public services will ultimately fall, but also participants in the private sector pension regime as well.

VII. Conclusions

A retirement system is a long-term financial contract to deliver old-age benefits to retirees. As such, it is a complex financial institution, appreciated by employees for their risk-pooling, scale economics, tax-deferral and self-control attributes; and by employers for their ability to attract, motivate, and retain workers in accordance with desired employment patterns. All retirement plans are not identical, however, since different types of plans offer distinct sorts of benefits and different risk-sharing between plan sponsors, plan participants, and other stakeholders.

A diverse range of designs has proliferated around the world over the last hundred years for pensions in the public sector. Until recently, the most prominent model for public sector employee

pensions was the defined benefit approach, but now public plans are catching up with the global transition toward alternative types of pension architectures and away from DB plans. In the future, cash balance plans that combine aspects of both defined benefit and defined contribution plans may become increasingly interesting to the public sector.

Evidently, in the process of reforming public pensions, high priority must be accorded to several factors:

- Determining how many and which types of employees and retirees are covered by each plan;
- Assessing the sponsor's liability for the entire range of benefits provided under the plan;
- Estimating the pension fund's revenue flows and stock of assets, and
- Conducting a series of simulation exercises to forecast how sensitive the survival of the pension plan is to changes in future assumptions.

In many cases, such an assessment tends to indicate that projected pension costs are far in excess of available pension financing. Such a projection exercise is essential, nevertheless, in order to prompt reform and to assess the costs and benefits of any given set of pension changes.

We have identified the four key functions of a pension plan, namely collecting contributions (taxes), managing funds, providing recordkeeping and reporting, and paying benefits. To carry out these functions, many types of public pension structures are available, some of which are integrated with a national Social Security system; some of which are contributory on the employees' part; and some of which are funded with dedicated assets backing benefit promises. In many countries, the DB model has dominated public pension systems, but of late some states and municipalities have implemented a defined contribution pension plan as an additional tier, or transitioned to a hybrid cash-balance plan or a DC plan. In the case of Argentina and Colombia, there have also been efforts to integrate public sector workers into the national DC pension system, but these reforms have gone slowly. We also discuss the rationales for and means of moving to a funded public pension system, including the problems associated with underfunding and the ways that accrued rights can be financed.

We have also indicated who the stakeholders are in a public pension system, what the implications are for the way a public pension system is managed, and some of the issues that arise when deciding the 'best' level at which to design and manage a public plan. Centralization of public pension management can curtail administrative costs, greatly reduce investment costs, ensure more accurate accounting of benefit promises, and be more efficient in terms of labor market consequences. As a result, large-scale DC plans can be more cost-effective than DB plans, depending on choices made about system design and structure.

The last topic examined is public pension plan governance and investment practice. It is widely agreed that pension fiduciaries must govern their plans in the participants' best interests. The prudent man concept arising from Western trust law stipulates that pension funds should be invested using the "care, skill, and diligence" of a prudent individual acting "solely in the interest" of plan participants. In practice this implies that public pension Boards must abide by written ethical standards limiting conflicts of interest, report and account to members with annual actuarial valuations and audits, all of which help engender a more transparent public pension environment for all concerned stakeholders. This in turn implies that public pension fund investment can be maintained in the context of a competitive structure, producing a positive effect on plan participants as compared to traditional efforts to limit plan investments to one or a few assets.

Without a doubt, there is a pressing need to improve the design and functioning of public sector pensions in developing as well as developed nations. As we have shown, a series of key reforms could in most cases be implemented, in the process of making pension plans covering public sector workers more equitable, more efficient, and financially more sustainable. These reforms would benefit not only the employer and employee groups most directly associated with the pension systems, but they can also enhance the wellbeing of broader groups of pension stakeholders. These include taxpayers and consumers on whom the burden of high taxes and reduced public services will ultimately fall.

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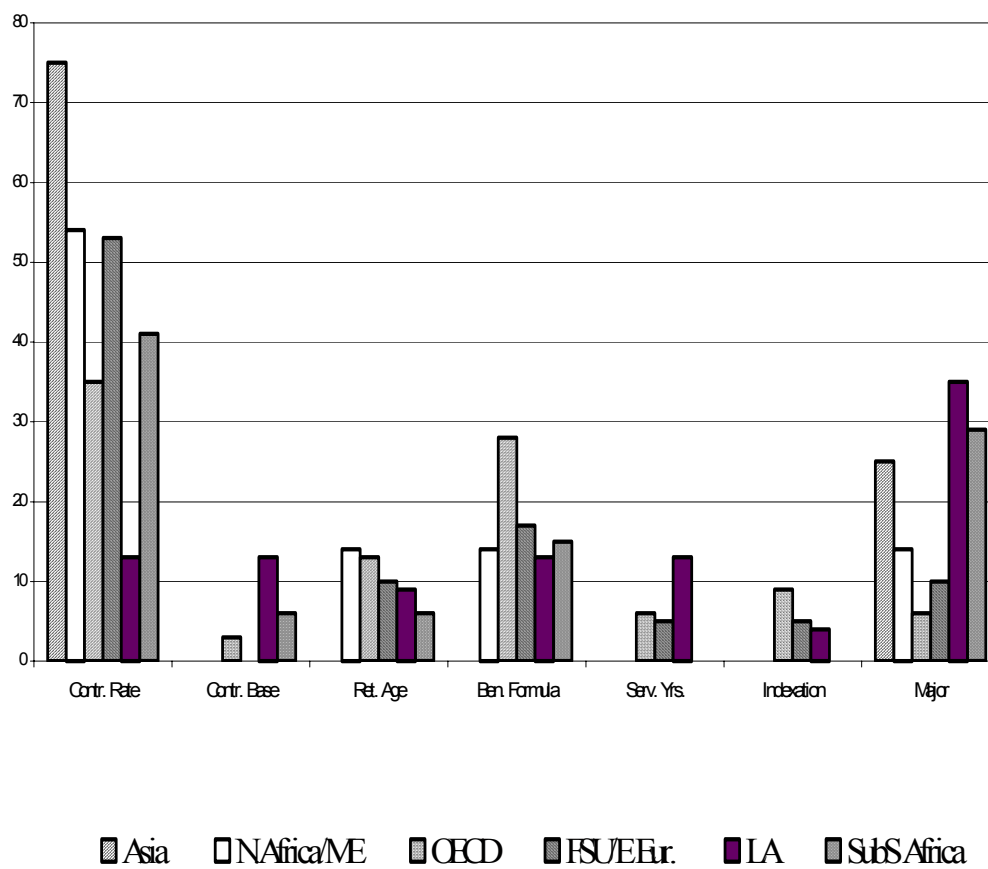
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Table 1. Retirement System Performance Standards and Quality Measures

Service Provided	Output Measure	Standard
Issue SS Numbers	How many issued accurately per year	<ul style="list-style-type: none"> •Chances assigned in 24 hrs of receiving documentation •Issue SSN correctly •Correct SSN probs <30 days
Pay benefits correctly	Benefit expenditures	<ul style="list-style-type: none"> •Goal of 100% accuracy for Initial payment •100% accuracy goal for lifetime payment •Accurate DI determinations
Pay benefits on time		<ul style="list-style-type: none"> •First benefit check within 15 days of filing for old-age benefits •Regular old-age benefits paid on schedule •DI benefits paid w/in 6 mos. of disability or 60 days of filing •Denied claims noticed w/in 60 days, 120 days for hearings, 90 days for review of appeal
Personal contact	Number of telephone calls, letters, visitors	<ul style="list-style-type: none"> •<= 15 min.wait time in field office w/ appt.; 30 min. w/o •Accurate handling of phone calls in <= 24 hours
Maintain accurate earnings records	No. of contributors, Amt. of contributions	<ul style="list-style-type: none"> •Post earnings accurately •Earnings posted w/in 6 mos. of end of tax year •Resolve earnings diffs. w/in 30 days

Source: Adapted from Mitchell and Sunden (1994)

Figure 1. Pension Reforms by Region



Source: Schwarz and Demirguc-Kunt (2000)